REMARKS

I.   INTRODUCTION

Claims 1, 4 and 6 have been amended to more particularly point out and distinctly claim that which is the subject matter of the invention. Thus, claims 1-11 remain pending in the application. The Applicant respectfully submits that no new matter has been added. In view of the following remarks, it is respectfully submitted that all of the presently pending claims are allowable.

II.   THE 35 U.S.C. §102 REJECTIONS SHOULD BE WITHDRAWN

Claims 1-11 have been rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent 6,735,253 to Chang et al. (hereinafter referred to as "Chang").

The present application is directed to providing "a range of transition effects to be generated without knowledge of the video material into which they are to be inserted." (Abstract, lines 4-6; pg. 5, lines 16-180).

As a general note, Applicant respectfully submits that the only true "transition effect" that Chang refers to is the dissolve. The dissolve of Chang is not performed without the knowledge of the video material into which the dissolve is to be inserted. Chang notes specifically that "[i]n order to perform a dissolve on two different scenes of video, the actual DCT coefficients for each block of compressed video in the last frame of the outgoing video scene, and the DCT coefficients for each block of compressed video of the first frame of the incoming video **scene must be extracted**." (Chang, col. 12, lines 10-15).

By contrast the present invention specifically does not allow for the construction of

7

dissolves for exactly the reasons described by Chang. The present application describes the construction of transitions without knowledge of the DCT coefficients (at the time of construction of the transition) of any of the frames in the sequence into which the transition is to be inserted. This has the great advantage over the prior art that these transitions do not need to be made afresh for every sequence in which they are used. Once constructed, the data for the transition can be inserted without change into a wide variety of MPEG sequences and will produce the required transition. (Specification, pg. 5, lines 16 – 18). When constructing the transition sequence, the only requirement is that the geometry of the arrangement of the macroblocks in the frames must be known in order to construct the transition. As this is quite standard for large amounts of video material within groups of material that conform to a standard geometry, no knowledge of the nature of the video material is required to construct the transition. (Specification, pg. 70, lines 3 – 5). In some circumstances it may be necessary to change some of the header information in the inserted transition sequence so that the correct reference frames are used.

The past reference frame and future reference frame for the transition need to be either I- or P- frames. If one or both of the immediately neighboring frames between which the transition is to be inserted are B- frames then these B-frames can be re-coded as I- or P- frames so they can be used as the past or future reference frames. However this will often be unnecessary as the existing first reference frames before or after these frames will usually be negligibly different to the frames immediately before and after the transition and can therefore be used directly as the reference frame for the transition.

The Applicant has chosen to amend the independent claims so as to clearly highlight the distinction that the template does not require knowledge of the image content of the video data when the transition is formed.

8

The various macroblock types that are referred to in the claims are constructed so that they cause the decoder, during the decompression process, to copy the DCT coefficients from past or future reference pictures in the sequence into which the transition is inserted. So, for example, Past Copy Macroblocks (PCMs) "copy a corresponding macroblock in a past reference picture." (Specification, pg. 6, lines 5 – 6). To emphasize the point, PCMs (e.g., claim 2) are not copies of macroblocks from past reference pictures, they are macroblocks which cause the decoder to copy a past macroblock when it encounters the PCM in any sequence into which the transition has been inserted. The PCM carries no DCT information and no motion vector information. (Specification, pg. 8, lines 8-9). Similarly POCMs copy a macroblock that is spatially offset from the current block in a past reference picture, so they are similar to PCMs except that they include some non-zero motion vector information. (Specification, pg. 8, lines 5 – 9). They still do not carry DCT information and so do not require knowledge of the DCT coefficients of the blocks in the sequence into which they are to be inserted. Finally, PFMs are macroblocks which contain motion vector information and constant offset information. (Specification, pg. 12, line 16 – pg. 13, line 1). The offset information is achieved by including non-zero residual DCT information, preferably including a single non-zero DC component for the DCT residuals. As this is a fixed offset added to the block it still does not require knowledge of the DCT coefficients in any of the macroblocks in the pictures of the sequence into which it is inserted. The equivalents of these basic macroblock types that reference Future reference pictures (FCMs FOCMs FFMs) may be understood in a similar light.

Finally the merge Macroblocks (MMs) take advantage of features of the MPEG standard to create a macroblock which will cause the decoder to average the referenced macroblocks from the past reference picture and the future reference picture. (Specification, pg. 6, lines 9 – 10). Preferably, they do not carry DCT information and do not require knowledge of the DCT coefficients of the blocks in the sequence into which they are to be inserted.

These macroblocks are often identical to their neighbors in the inserted frame which

9

means that runs of such macroblocks may be very compactly encoded using the "skipped block" functionality allowed for in the MPEG standard which essentially allows repeated macroblocks to be omitted. The decoder will insert omitted block when it discovers it is missing. (Specification, pg. 7, lines 1 – 18).

Reading Applicant's first claim in this context it is clear that the requirement that the macroblocks be "predefined macroblocks" cannot be satisfied by the art described by Chang for the dissolve transition. The invention described by Chang must refer to the DCT components in the video sequence into which the transition is to be inserted to define the required macroblock and this must be done each time the transition is constructed. This is not the case for the Applicant's invention.

The masking described by Chang and referred to by the Examiner could conceivably be recast to produce a transition effect (though not one of those described in the current patent application) and does use predefined macroblocks (black blocks), but must also re-encode some blocks in P and B frames to achieve the desired effect. (Chang, col. 13, lines 15-28). So it is also unable to use only predefined macroblocks as recited in claim 1.

The "Freeze frame" effect described by Chang and referred to by the Examiner is essentially the same as the Hold effect described in the present application as a special case of the wipe transition which employs combinations of PCM and FCM macroblocks. (Specification, pg. 12, line 16 – pg. 13, line 1). However this "duplicate frame" effect is well known and is in fact described in the MPEG standard. The "Hold effect" is not claimed by itself, but presented only as simple example of the application of the FCM or PCM in isolation. The wipe transition combines the FCMs and PCMs in ways that are not known and when combined with the other predefined macroblocks allow for novel and non-obvious applications with significant commercial value.

10

As to the Examiner's comments on the rest of the pending claims, these all presume that Chang discloses the use of predefined macroblocks. However, as argued above, where Chang uses predefined macroblocks, he either uses them in obvious and well known ways (the freeze frame) or in situations where he must combine predefined and non-predefined macroblocks to achieve his desired effects. The Applicant's invention allows the exclusive use of predefined macroblocks to achieve the desired effects.

11

III.   CONCLUSION

In light of the foregoing, the Applicant respectfully submits that all of the pending claims are in condition for allowance. All issues raised by the Examiner have been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

Date: November 8, 2004   By:_____

Michael J. Marcin (Reg. No. 48,198)

FAY KAPLUN & MARCIN, LLP
150 Broadway, Suite 702
New York, NY 10038
Tel: (212) 619-6000
Fax: (212) 619-0276

12